FIG. 1

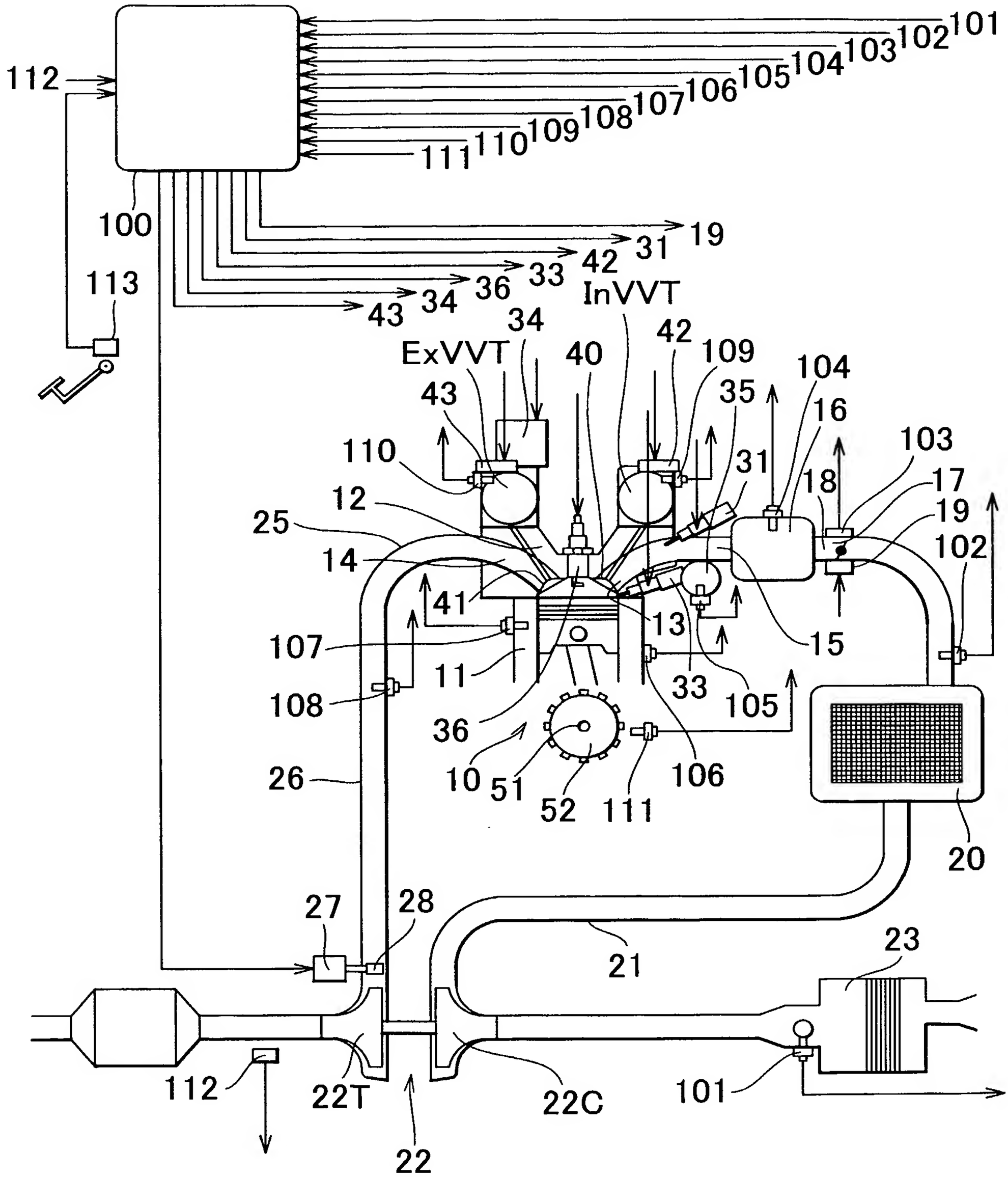

112
111
110
109
108
107
106
105
104
103
102
101
100
113
19
31
42
33
36
34
43
InVVT
ExVVT
34
40
42
109
104
43
35
16
110
31
103
18
12
17
25
19
14
102
41
13
15
107
11
33
105
108
36
10
51
52
111
106
26
20
27
28
21
23
112
22T
22C
101
22

FIG. 2A

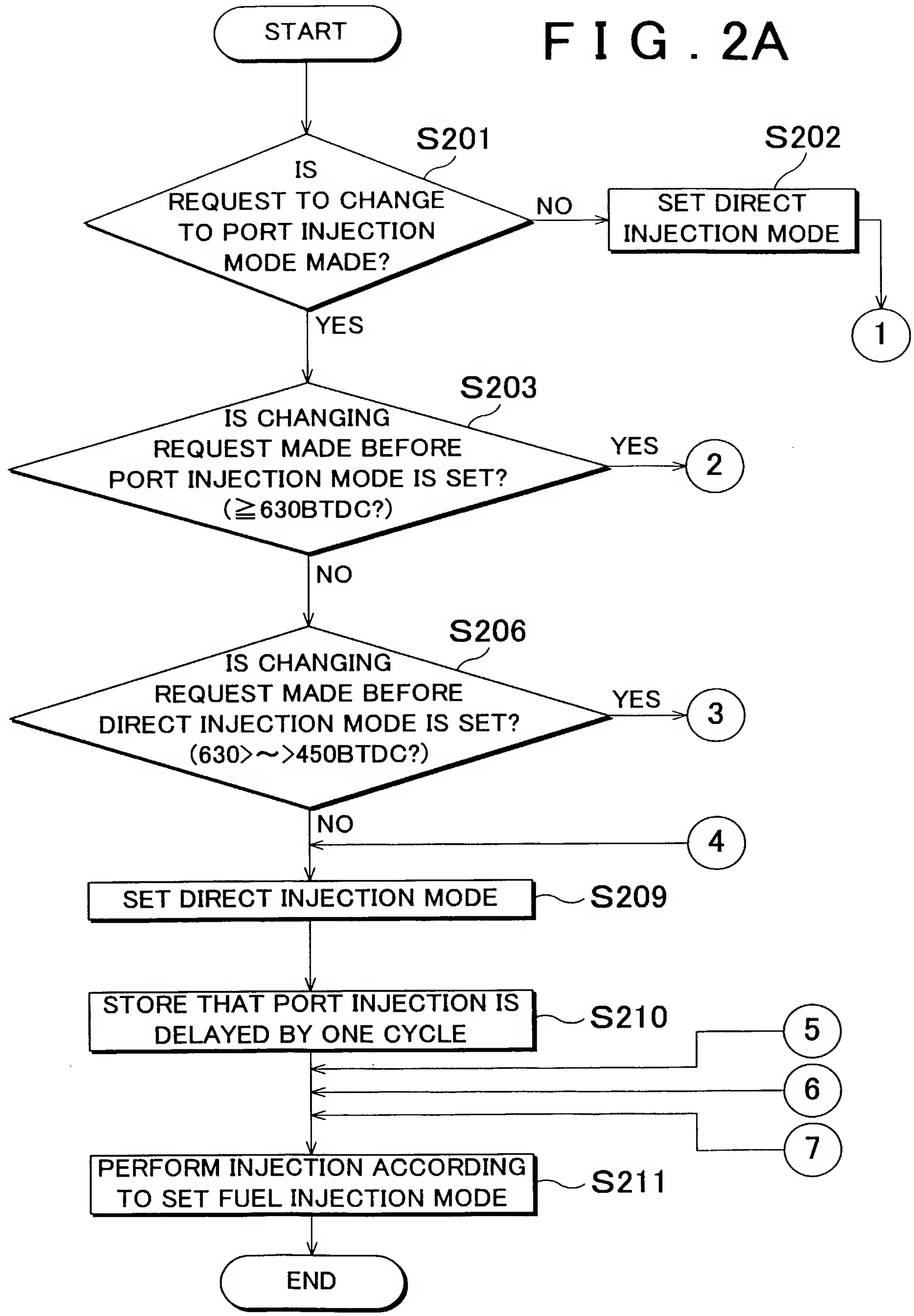

START
S201
IS REQUEST TO CHANGE TO PORT INJECTION MODE MADE?
NO
S202
SET DIRECT INJECTION MODE
1
YES
S203
IS CHANGING REQUEST MADE BEFORE PORT INJECTION MODE IS SET? (≧630BTDC?)
YES
2
NO
S206
IS CHANGING REQUEST MADE BEFORE DIRECT INJECTION MODE IS SET? (630>~>450BTDC?)
YES
3
NO
4
SET DIRECT INJECTION MODE
S209
STORE THAT PORT INJECTION IS DELAYED BY ONE CYCLE
S210
5
6
7
PERFORM INJECTION ACCORDING TO SET FUEL INJECTION MODE
S211
END

FIG. 2B

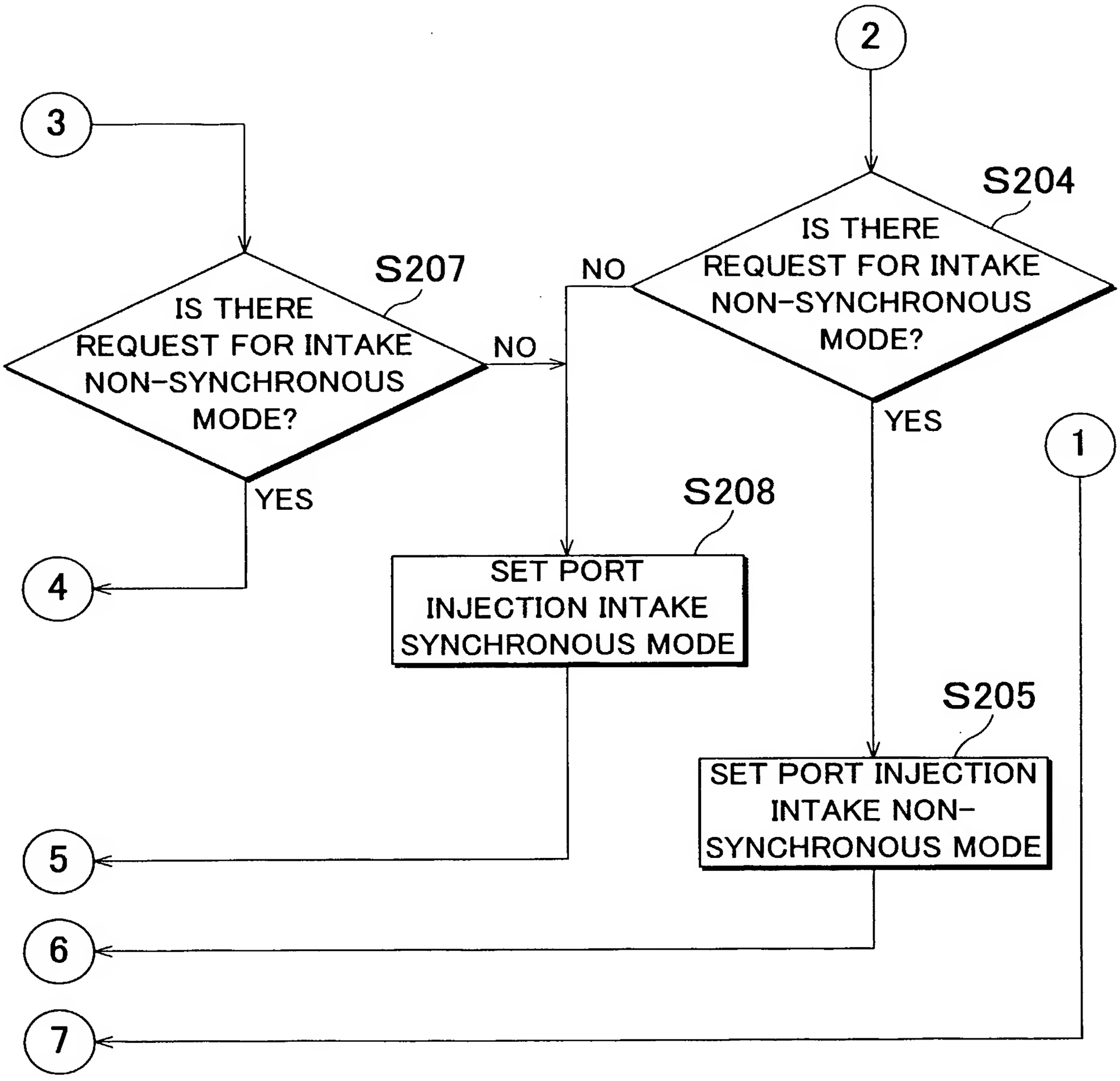

2
S204
IS THERE REQUEST FOR INTAKE NON-SYNCHRONOUS MODE?
NO
YES
3
S207
IS THERE REQUEST FOR INTAKE NON-SYNCHRONOUS MODE?
NO
YES
4
S208
SET PORT INJECTION INTAKE SYNCHRONOUS MODE
S205
SET PORT INJECTION INTAKE NON-SYNCHRONOUS MODE
1
5
6
7

FIG. 3

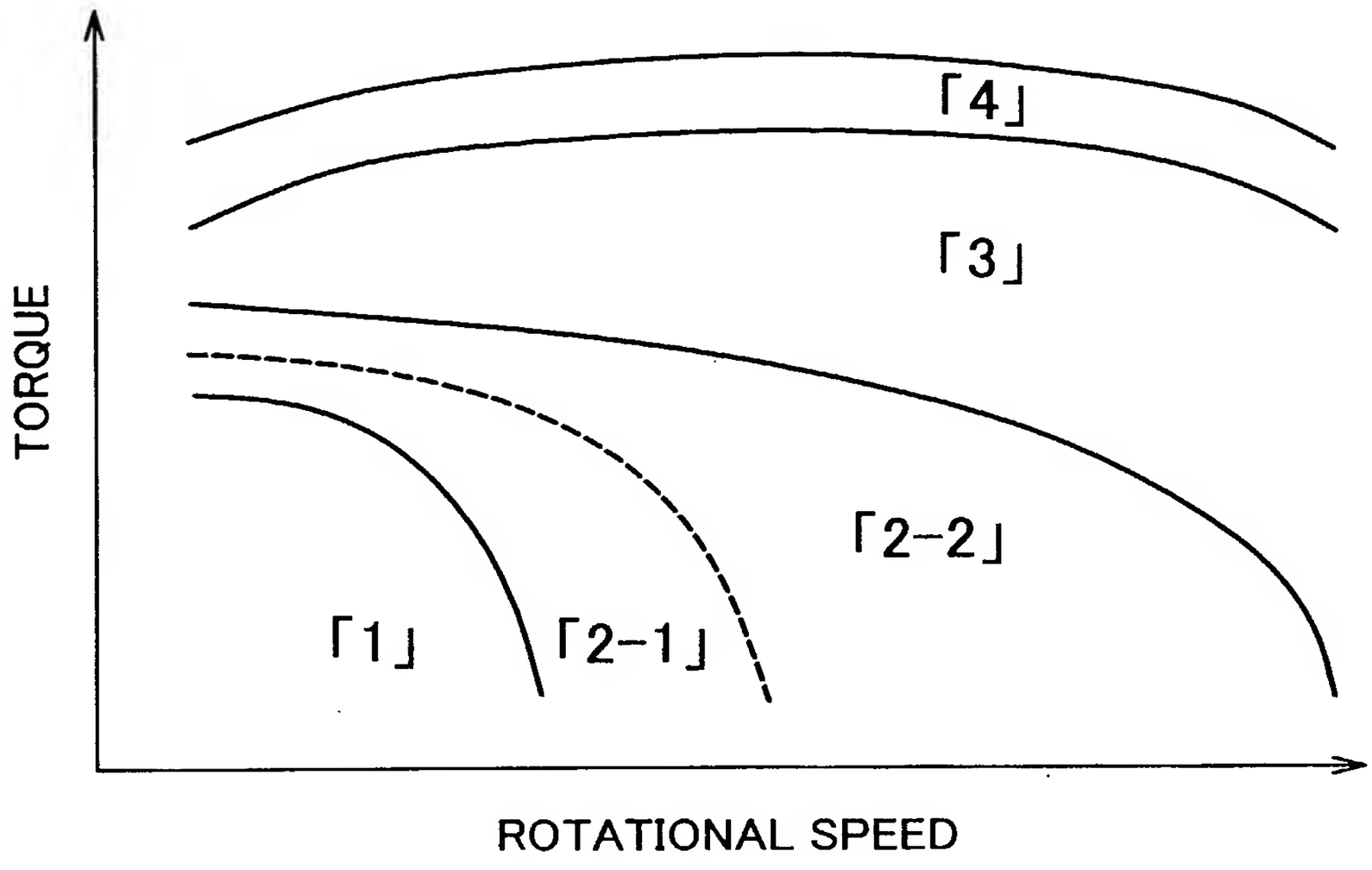


FIG. 4

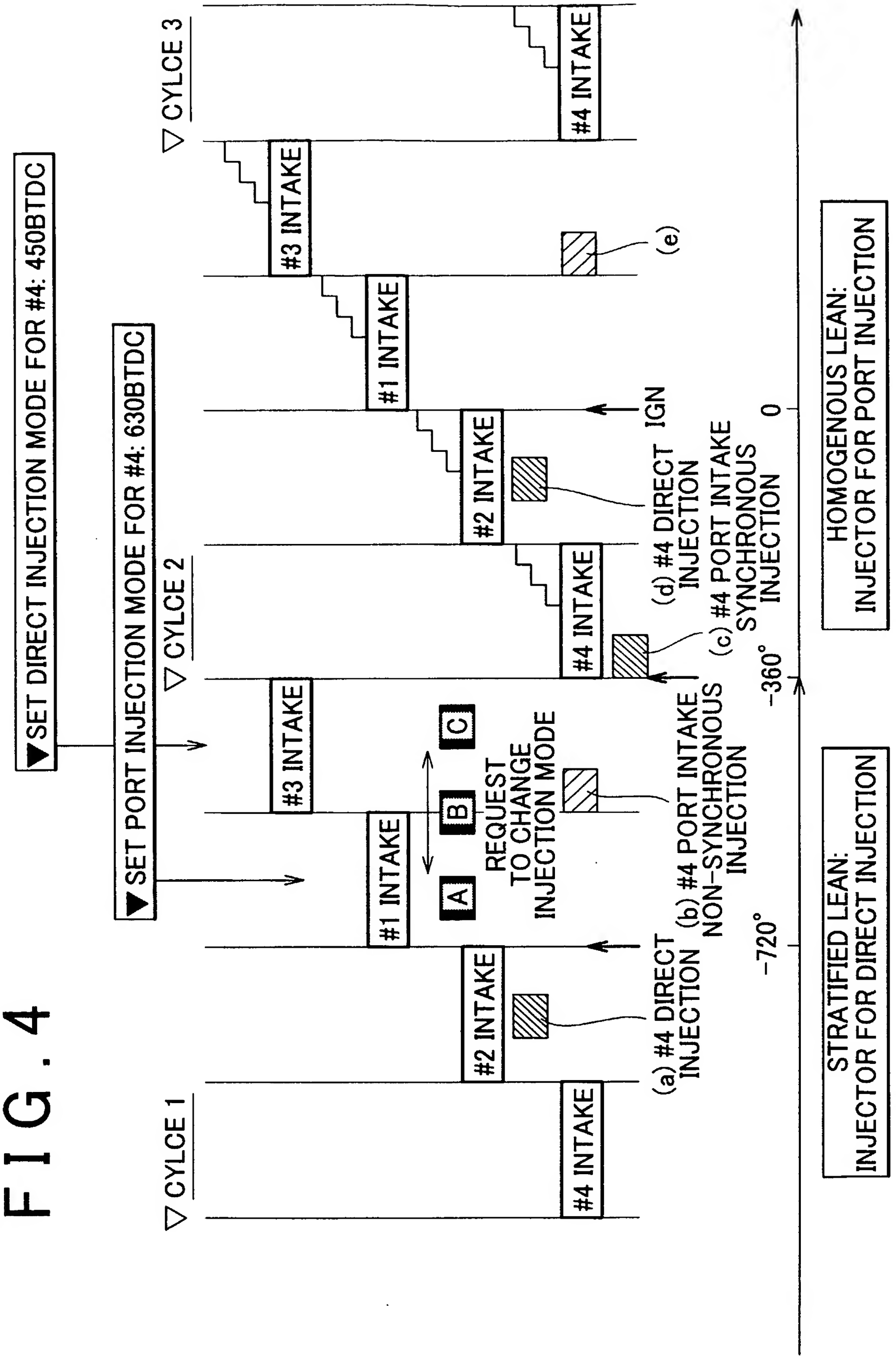

▽CYLCE 3
#4 INTAKE
#3 INTAKE
#1 INTAKE
#2 INTAKE
#4 INTAKE
(e)
▽CYLCE 2
#3 INTAKE
#1 INTAKE
#2 INTAKE
#4 INTAKE
A
B
C
REQUEST TO CHANGE INJECTION MODE
▽CYLCE 1
#2 INTAKE
#4 INTAKE
(a) #4 DIRECT INJECTION
(b) #4 PORT INTAKE NON-SYNCHRONOUS INJECTION
(c) #4 PORT INTAKE SYNCHRONOUS INJECTION
(d) #4 DIRECT INJECTION
▼SET DIRECT INJECTION MODE FOR #4: 450BTDC
▼SET PORT INJECTION MODE FOR #4: 630BTDC
IGN
0
-360°
-720°
HOMOGENOUS LEAN: INJECTOR FOR PORT INJECTION
STRATIFIED LEAN: INJECTOR FOR DIRECT INJECTION

FIG. 5A

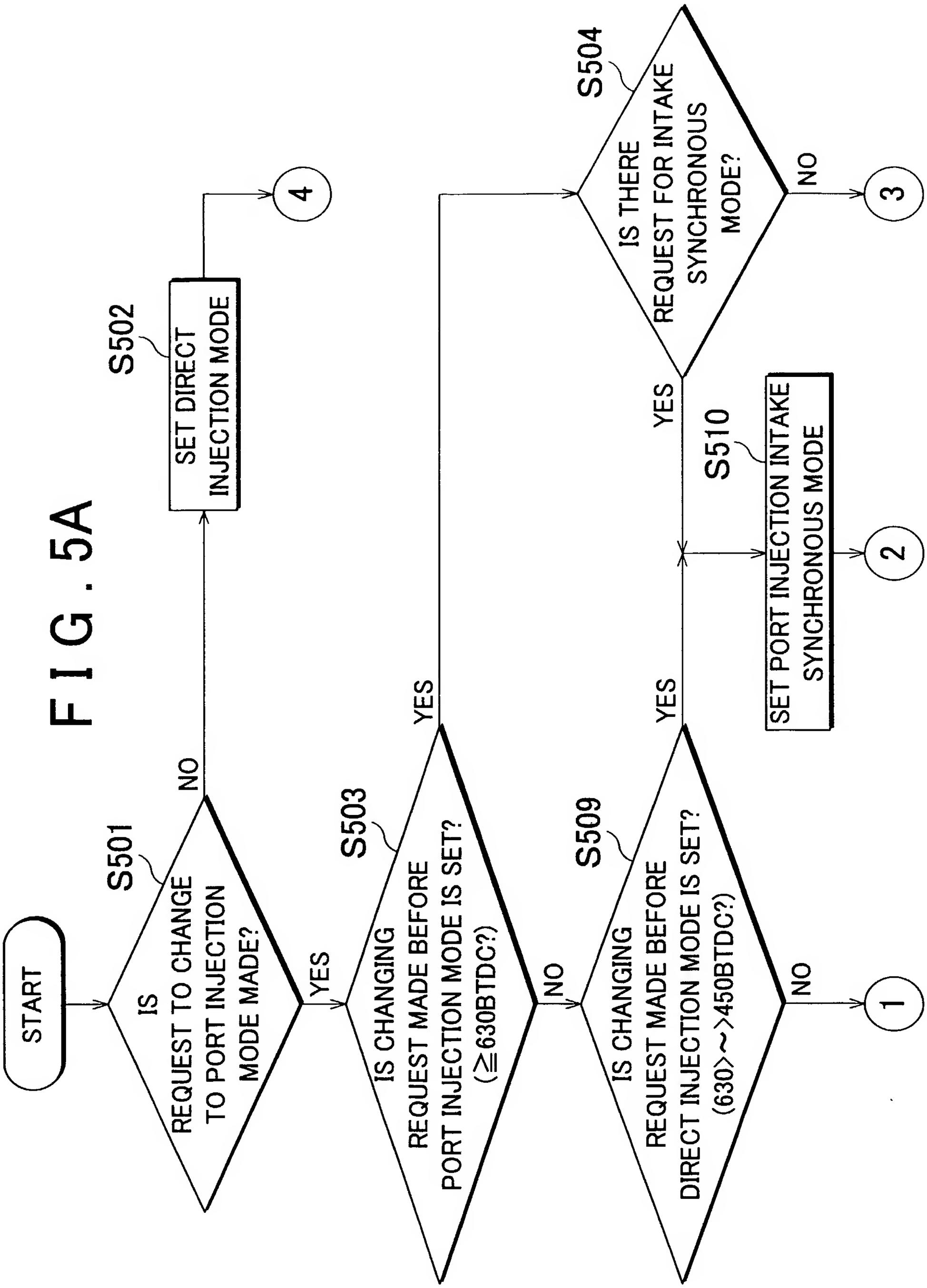
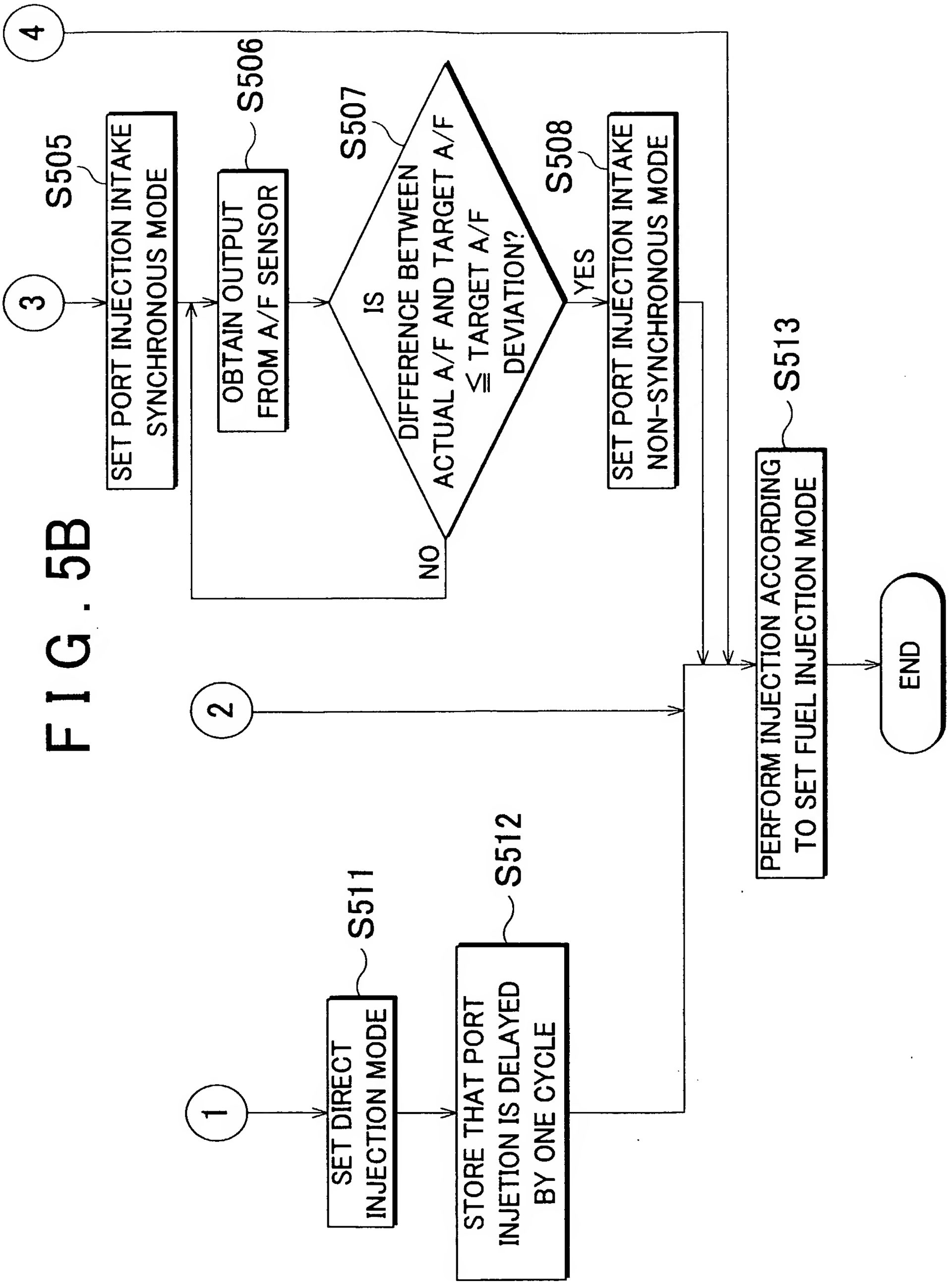

START
S501
IS REQUEST TO CHANGE TO PORT INJECTION MODE MADE?
NO
YES
S503
IS CHANGING REQUEST MADE BEFORE PORT INJECTION MODE IS SET? (≧630BTDC?)
NO
YES
S509
IS CHANGING REQUEST MADE BEFORE DIRECT INJECTION MODE IS SET? (630>～>450BTDC?)
NO
YES
S510
SET PORT INJECTION INTAKE SYNCHRONOUS MODE
S504
IS THERE REQUEST FOR INTAKE SYNCHRONOUS MODE?
NO
YES
S502
SET DIRECT INJECTION MODE
1
2
3
4

FIG. 5B


1
2
3
4
SET DIRECT INJECTION MODE
S511
STORE THAT PORT INJETION IS DELAYED BY ONE CYCLE
S512
SET PORT INJECTION INTAKE SYNCHRONOUS MODE
S505
OBTAIN OUTPUT FROM A/F SENSOR
S506
IS DIFFERENCE BETWEEN ACTUAL A/F AND TARGET A/F ≦ TARGET A/F DEVIATION?
S507
NO
YES
SET PORT INJECTION INTAKE NON-SYNCHRONOUS MODE
S508
S513
PERFORM INJECTION ACCORDING TO SET FUEL INJECTION MODE
END